Unit 5
Factoring
Day 1
Factoring Using Integers - Part 1

Factoring Using the GCF

1) $-8a^5 + 24a^3 - 44a^2$

$-4a^2(2a^3 - 6a + 11)$

2a)

$$5(x+3)^2 - 7(x+3)$$

$(x+3)[5(x+3) - 7]$

$(x+3)(5x+15-7)$

$(x+3)(5x+8)$

2b)

$$5(x+3)^2 - 15(x+3)$$

$5(x+3)[(x+3) - 3]$

$5(x+3)(x)$

$5x(x+3)$

FACTORING THE DIFFERENCE OF SQUARES

1) $4a^2 - 25$

$(2a+5)(2a-5)$

2) $16x^{2r} - y^{6s}$

$(4x^r + y^{3s})(4x^r - y^{3s})$

3) $(x+y)^2 - 25$

$(x+y-5)(x+y+5)$

$25-(x+y)^2$

$[5-(x+y)][5+(x+y)]$

$(5-x-y)(5+x+y)$

4) $16x^8 - 1$

$(4x^4-1)(4x^4+1)$

$(2x^2-1)(2x^2+1)(4x^4+1)$

FACTORING PERFECT SQUARE TRINOMIALS

1) $9m^2 + 30m + 25$

$3m \cdot 5$

$15m$

$30m$

$(3m+5)^2$

2) $x^6 - 14x^3 + 49$

$(x^3 - 7)^2$

FACTOR BY GROUPING

1) $\dfrac{a^2-ab+5a+5b}{a^2-ab-5a+5b}$

$a(a-b)+5(a-b)$

$(a-b)(a+5)$

$a(a-b)-5(a-b)$

$(a-b)(a-5)$

2) $m^2-4n-4m-n^2$

$(m^2-n^2)+(4n-4m)$

$(m-n)(m+n)+4(n+m)$

$(m+n)(m-n-4)$

ONE PROBLEM - FOUR WAYS!

1st way - factor by grouping (aka - "rainbow")

$$6x^2 + x - 15$$

$6 \cdot -15$

-90

$10 \cdot -9$

$10 + -9 = 1$

$10 \cdot -9 = -90$

$(6x^2 + 10x) + (-9x - 15)$

$2x(3x + 5) + -3(3x + 5)$

$(3x + 5)(2x - 3)$

ONE PROBLEM - FOUR WAYS!

2nd way - box method

$$6x^2 + x - 15$$

-90

$10 \quad -9$

	$3x$	5
$2x$	$6x^2$	$10x$
-3	$-9x$	-15

$$(2x-3)(3x+5)$$

ONE PROBLEM - FOUR WAYS!

3rd way - "BEST" method

$$6x^2 + x - 15$$

$6 \cdot -15$

-90

$-9 \quad 10$

$$\frac{(6x+10)}{2}\left(\frac{6x-9}{3}\right)$$

$$(3x+5)(2x-3)$$

ONE PROBLEM - FOUR WAYS!

4th way - Educated guessing

$$6x^2 + x - 15$$

$(3x + 5)(2x - 3)$

$10x$

$9x$.

HOMEWORK:
Wksht #1,
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